in the form of a composition in which it is combined with any other pharmaceutically compatible product, which can be inert or physiologically active. The medicinal products according to the invention can be used via the intravenous, subcutaneous, oral, rectal, topical or pulmonary (inhalation) route.

The sterile compositions for intravenous or subcutaneous administration are generally aqueous solutions. These compositions can also contain adjuvants, in particular wetting agents, isotonifying agents, emulsifiers, dispersants and stabilizers. The sterilization can be carried out in several ways, for example by aseptic filtration, by incorporating sterilizing agents into the composition or by irradiation. They can also be prepared in the form of sterile solid compositions which can be dissolved, at the time of use, in sterile water or any other injectable sterile medium.

Solid compositions for oral administration which can be used are tablets, pills, powders (gelatin capsules or cachets) or granules. In these compositions, the active principle is mixed with one or more inert diluents, such as starch, cellulose, sucrose, lactose or silica, under a stream of argon.

These compositions can also comprise substances other than diluents, for example one or more lubricants such as magnesium stearate or talc, an agent for promoting oral absorption, a dye, a coating (dragees) or a varnish.

Liquid compositions for oral administration which can be used are pharmaceutically acceptable solutions, suspensions, emulsions, syrups and elixirs containing inert diluents such as water, ethanol, glycerol, plant oils or liquid paraffin. These compositions can comprise substances other than diluents, for example wetting products, sweeteners, thickeners, flavorings or stabilizers.

The compositions for rectal administration are suppositories or rectal capsules which contain, besides the active product, excipients such as cocoa butter, semi-synthetic glycerides or polyethylene glycols.

The compositions for topical administration can be, for example, creams, lotions, eye drops, throat sprays, nasal drops or aerosols.

The doses depend upon the desired effect, the duration of the treatment and the route of administration used; they are generally between 0.5 mg and 10 mg per kg per day, subcutaneously, i.e. 3 to 60 mg per day for a 60 kg adult.

In general, the doctor will determine the appropriate dosage as a function of the age, the weight and all the other personal factors of the individual to be treated.

The invention also relates to the use of the oligosaccharides according to the invention for preparing a medicinal product which is useful for preventing or treating diseases linked to an inflammatory process involving the production of nitrite oxide (NO), or which is useful for the survival and growth of motoneurons.

The invention is particularly advantageous for the use of the oligosaccharides of formula (I) for preparing medicinal products which are useful for preventing and treating cerebral ischaemias, cardiac ischaemias or peripheral vascular ischaemias, osteoarthritis, traumas of the central nervous system, cranial, spinal and craniospinal traumas, multiple sclerosis, neuropathic pain and peripheral neuropathies, motoneuron disease, amyotrophic lateral sclerosis, neuro-AIDS, Alzheimer's disease, Parkinson's disease and Huntington's chorea.

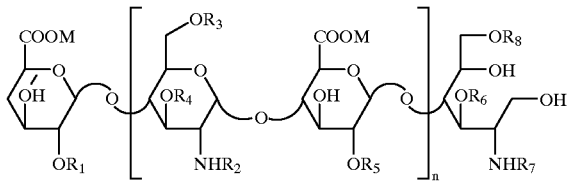
The invention also relates to the method for preventing and/or for treating diseases associated with an inflammatory process involving the production of cytotoxic substances such as nitrite oxide (NO) and of diseases linked to the survival and growth of motoneurons. The oligosaccharides of formula (I) can thus be used for preventing and/or treating neurodegenerative diseases for which cerebral inflammation plays a deleterious role which can lead to death, among which mention may be made of cerebral ischemias, cardiac ischemias (myocardial infarction), peripheral ischemias, traumas of the central nervous system and in particular cranial, spinal and craniospinal traumas, multiple sclerosis, neuropathic pain and peripheral neuropathies, motoneuron diseases including amyotrophic lateral sclerosis, progressive spinal atrophy, infantile muscular atrophy and primary lateral sclerosis, neuro-AIDS, Alzheimer's disease, Parkinson's disease and Huntington's chorea and certain forms of osteoarthritis, in particular with articular localization.

The present invention also relates to the method for preventing and/or treating motoneuron diseases such as amyotrophic lateral sclerosis, progressive spinal atrophy, infantile muscular atrophy and primary lateral sclerosis.

What is claimed is:

1. A pharmaceutical composition comprising one or more oligosaccharides of formula:

(I)



in which n is an integer from 0 to 25, each of R_1, R_3, R_4, R_5, R_6 and R_8, which may be identical or different, is hydrogen or an SO_3M radical, each of R_2 and R_7, which may be identical or different, is hydrogen or an SO_3M or $COCH_3$ radical, and M is sodium, calcium, magnesium or potassium, excluding, however, those oligosaccharides wherein (1), n is equal to 0 and (2) either (a) each of R_1, R_6 and R_8 is hydrogen, R_7 is an SO_3M or $COCH_3$ radical and M is sodium, or (b) each of R_1 and R_6 is hydrogen R_7 is a $COCH_3$ radical, R_8 is a SO_3M radical and M is sodium, or (c) R_6 is hydrogen, each of R_1, R_7 and R_8 is an SO_3M radical and M is sodium, or (d) each of R_6 and R_7 is hydrogen, each of R_1 and R_8 is an SO_3M radical and M is sodium, or (e) each of R_1 and R_6 and R_7 is hydrogen, R_8 is an SO_3M radical and M is sodium.

2. A pharmaceutical composition according to claim **1**, wherein R_4 and R_6 both are hydrogen.

3. A pharmaceutical composition according to claim **1**, wherein n is an integer from 0 to 10.

4. A pharmaceutical composition according to claim **2**, wherein n is an integer from 0 to 10.

5. A pharmaceutical composition according to claim **3**, wherein n is an integer from 0 to 6.

6. A pharmaceutical composition according to claim **4**, wherein n is an integer from 0 to 6.

7. A pharmaceutical composition according to claim **5**, wherein n is an integer from 1 to 6.

8. A pharmaceutical composition according to claim **6**, wherein n is an integer from 1 to 6.

9. A pharmaceutical composition according to claim **1**, wherein n is equal to 1, each of R_1, R_2, R_3, R_5, R_7 and R_8 is an SO_3M radical, each of R_4 and R_6 is hydrogen and M is sodium.

10. A pharmaceutical composition according to claim **1**, wherein n is equal to 2, each of R_1, R_2, R_3, R_5, R_7 and R_8 is an SO_3M radical, each of R_4 and R_6 is hydrogen and M is sodium.